EARTH SUMMIT
ISSUES IN BRIEF

POVERTY AND THE GLOBAL ECONOMY

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THE ENVIRONMENTAL PROBLEM

Poverty puts pressure on people and nations, especially in the developing world, to engage in many unsustainable and ecologically damaging practices. Poor people in search of day-to-day sustenance and impoverished nations in need of export earnings to service their debt overexploit their natural resources — forests, fisheries and minerals. Land which is ecologically fragile and unsuitable for agriculture is cultivated and overgrazed. This leads to soil erosion, depletion of water reserves, lower crop yields and desertification.

Poor women and children often spend hours each day collecting and carrying drinking water and firewood — time and energy that could be better spent on education, community development and building good family relations. Land degradation and poverty in rural areas also prompt mass migration to already crowded urban areas where the lack of clean water, sewage systems and rubbish collection contributes to disease and water pollution.

Poverty (which is associated with high infant death rates) leads families to have more children, in order to ensure the survival of some who can serve as wage earners. Poverty is the reason some developing countries (and some poor areas in industrialized countries) import toxic waste in exchange for payments of foreign currency. Poverty can be linked with the adoption by poor nations of the development model used by the industrialized world, involving the widespread use of pollution-generating technologies, chemically intensive farming methods and a variety of practices that waste energy and natural resources.

Developing countries suffer from environmental problems — such as global warming and depletion of the ozone layer — that have so far been caused largely by economic activities in the developed nations. Poor countries lack the financial resources to shift to more expensive environmentally sound technologies and sustainable development practices. In addition to its environmental and humanitarian costs, poverty contributes to social tensions, political instability and military conflict.

HUMAN ACTIVITIES CAUSING THE PROBLEM

The roots of poverty can be seen to lie in the uneven distribution of food, land and capital. Developing countries continue to feel the adverse effects of colonialism, when vast amounts of resources and national wealth were transferred to industrializing countries in the North. The current global economic and political system continues to reflect this historic imbalance.

International trade is subject to many protectionist measures. Development assistance from multilateral lending agencies comes with conditions and often supports environmentally unsound development projects. Money spent on military activities dwarfs that spent on sustainable development. The industrialized world continues its environmentally damaging patterns of production and consumption.

At the same time, developing countries have spent large sums of money on weapons and military activities. Much of the aid they have received has been lost to corruption and questionable spending. Many countries have had

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difficulty adopting effective family planning practices and in battling a mindset which sees environmental protection as secondary to daily survival, not a crucial element of it.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Many Governments see the eradication of poverty as the starting point for action to sustain the environment. Developing countries state that financial aid, additional to present development assistance, should be made available to give those countries access to environmentally sound technologies and increase their capacity to develop their own technologies and experts. The scope of this aid and the terms for transfer of technology will be discussed at the Summit.

Poor people are disproportionately female. Since women play a pivotal role in the development of all societies, both in the home and outside it, efforts to free women from poverty are essential if they, their families and the communities in which they live are to prosper.

Attention should also be paid to the state of the international economy, including the external debt of developing countries, the downward spiral in prices paid for their export commodities and the need to improve terms of trade between developing and industrialized countries. In various international forums, developed countries have resisted changes in the existing situation. This divergence of views is also likely to be expressed at the Earth Summit. Developing countries feel that more attention should be paid to the environmental consequences of the industrialized countries' open-ended growth and high levels of production and consumption.

FACTS

- Of the roughly 4.2 billion people in the developing world, about 1 billion live in poverty.
- Of these 1 billion poor people, 450 million live in low-potential agricultural areas, 450 million live in ecologically vulnerable areas susceptible to soil erosion, land degradation, floods and other disasters, and 100 million live in urban slums.
- In sub-Saharan Africa, 62 per cent of the population lives in poverty; in Latin America, 35 per cent; in North Africa and the Mideast, 28 per cent; and in Asia, 25 per cent.
- Since 1975, the number of urban poor has doubled in Latin America, and increased by 81 per cent in Africa and by 55 per cent in Asia.
- Industrialized countries consume between 48 and 72 per cent of the world's basic food commodities, such as cereals, meat and milk.
- Two thirds of the poor people in the world are under age 15.
- Seventy-seven per cent of the world's people receive 15 per cent of total income.
- In Latin America, one per cent of the people own 40 per cent of the arable land.
- If present trends continue, the world's population is expected to reach 8.5 billion by 2025 and 9-14 billion by the end of the 21st century. Ninety per cent of future population growth will occur in developing countries.
- External debt of developing countries was estimated at $1.3 trillion in 1990.
- Between 1984 and 1989, developing countries transferred to industrialized countries, mainly through debt servicing, about $180 billion — more money than they received from industrialized countries in aid and other funds.

ECONOMICS AND THE ENVIRONMENT: THE PROBLEM

Much of the developing world is caught in a cycle of poverty and environmental degradation, aggravated by an increasingly unfavourable international economic climate. As poor people exploit their environment in order to survive, they undermine the natural resource base on which economic development ultimately depends. These countries lack the financial resources to meet the needs of their growing populations. The additional short-term costs of adopting development practices that are environmentally sustainable are out of reach.

The situation is made worse by the debt owed by many developing countries to overseas banks and donor Governments. Debt servicing costs stood at $30 billion yearly in the second half of the 1980s for developing countries as a whole, while prices paid by industrialized countries for export goods produced by the developing world fell sharply and barriers to trade were erected by developed countries.

To raise living standards while protecting the environment, developing countries require financial and technical support from richer ones. The United Nations estimates that some $125 billion a year will be needed annually from 1993 to 2000. Most of this would be in the form of grants or loans given on terms more favourable than commercial rates. The largest amounts are needed to develop energy, urban infrastructure, health services, agriculture and population planning programmes.

The amount required is more than double the current $55 billion provided annually in official development assistance (ODA) by donor countries. Although the costs of not acting to sustain the environment are likely to be much higher in the long term, this level of assistance is less likely to be forthcoming unless national priorities in the developed countries change. The reallocation of military expenditures to sustainable development policies and practices is one possibility. However, it is anticipated that some $5-10 billion in new funding could be committed at the Summit.

Increasingly, the economic slowdown in a number of industrialized countries has focused attention on the need to commit financial resources to their domestic needs. Some donor Governments want to redirect current assistance into environmentally sustainable activities in developing countries instead of increasing the total amount of aid given. There has also been considerable debate about the conditions that should be attached to financial assistance, how funds will be administered and how to facilitate developing countries' acquisition of technology needed for environmentally sound development.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Who will pay? The Governments of most developing countries (and some developed countries) hold the industrialized countries responsible for the major environmental problems in the world today and for the introduction of harmful development models worldwide. They feel that the cost of shifting to sustainable practices should therefore be paid by those countries, as mandatory compensation for the damage that has been done. China, on behalf of the developing countries, has proposed that industrialized countries would be required to pay a proportion of their gross national product (GNP) each year into a global environmental fund. The amount would increase to one per cent of GNP by the year 2000.

The United States and some other developed countries oppose this approach; they state that such assistance should be voluntary. The Nordic States have called on all industrialized countries to commit 0.35 per cent of their GNP to official development assistance by 1997, and 0.7 per cent by 2000.

How will funds be administered? Another important divergence of views is over whether international financial mechanisms should be set up to

address only "global" environmental problems (climate change, ozone depletion), as some donor countries have maintained. Developing countries contend that more funding should be made available for national problems of land use, air quality and water supplies, which have international ramifications.

The ways in which funds should be administered has been hotly debated. The Global Environmental Facility (GEF) was established in 1991 as a three-year pilot project by the World Bank, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). It funds only projects that aim to limit emissions of greenhouse gases and protect biological diversity, oceans and the ozone layer. Most of the industrialized countries would like to extend the mandate of the GEF to make it the principal funding mechanism for global environmental issues.

The developing countries instead propose that separate funds be established for each global environment convention. A new "Green Fund" would be established to deal with development problems not covered by specific international agreements — such as pollution of freshwater sources and coastal areas, ecosystem protection, deforestation, soil loss and desertification — and with the costs of transferring environmentally sound technologies to the developing countries. This fund would offer credit at favourable rates for development projects and would give grants to strengthen the institutions and train the personnel needed to implement them.

Developed and developing countries would have equal representation in the Green Fund's management. The latter say that the GEF is undemocratic and represents the interests of the donor countries that manage the World Bank. Developing countries also object to the conditions attached to financial support. Most industrialized countries oppose the creation of new financial institutions. If their view prevails, it appears likely that the GEF will be restructured in response to the developing countries' concerns.

How will technology transfer and intellectual property rights be handled? A key requirement for sustainable development is the availability of production techniques that are more efficient and less polluting than those currently in use. Developing countries need access to new technology — computer programmes, cleaner manufacturing processes, substitutes for toxic chemicals and biotechnology — and financial and technical help to use it appropriately. They want easier access to equipment and knowledge in order to increase the flow of technical expertise. The specific terms of such preferential arrangements are under discussion.

Developing countries propose that assistance be given in the form of grants or preferential loans so they can purchase licenses for patented processes (based on intellectual property rights) — a small but significant proportion of environmentally sound technologies. They have also proposed that shorter terms be given for patents and that patent holders be obliged to make information available if voluntary arrangements cannot be made. The United States is opposed to these proposals.

FACTS

- Assistance equalling 0.7 per cent of the industrialized countries' GNP would make available some $150 billion per year, more than the $125 billion estimated cost of sustainable development.
- Worldwide military spending is officially at least $1 trillion per year and may be as high as $3 trillion.
- An "environmental" tax of $1 on each barrel of oil consumed in industrialized countries would raise $13.6 billion annually.
- Funding administered by the Global Environmental Facility (GEF) currently totals $400 million per year.
- External debt of developing countries was estimated at $1.3 trillion in 1990.

THE ENVIRONMENTAL PROBLEMS

Global Climate Change: The build-up of "greenhouse gases" — such as carbon dioxide, methane, nitrous oxide and chlorofluorocarbons (CFCs) — that trap heat from the sun is thought to be causing a gradual rise in the planet's average temperature. Possible consequences include rising sea levels that threaten low-lying islands and coastal areas, desertification, crop failure, extreme weather patterns, disruptions in seasonal phenomena such as monsoons and unpredictable rainfall alternating between drought and flooding.

Depletion of the Ozone Layer: CFCs, other chlorine compounds and halons react chemically with oxygen to destroy stratospheric ozone, which shields the planet from the sun's harmful ultraviolet radiation. Most CFC substitutes devised thus far also harm the ozone layer. The thinning of the ozone layer is thought to be causing damage to crops, ocean plankton and sensitive ecosystems and a greater incidence of skin cancers, cataracts and diseases of the human immune system such as AIDS.

Acid Rain: Rain, snow, sleet, fog and dust that is abnormally acidic because of air pollution. The most common form of transboundary air pollution, it results in the death of fish, plants and trees in lakes, rivers and forests.

Smog: Tropospheric (ground-level) ozone, carbon monoxide and other pollutants continue to erode air quality in the world's crowded metropolitan areas, causing or contributing to a variety of often lethal health and respiratory ailments.

HUMAN ACTIVITIES CAUSING THE PROBLEMS

Global warming, acid rain and smog are caused primarily by burning fossil fuels — oil, gas and coal — in power plants, factories, automobiles, airplanes and heating furnaces. Burning forests to clear land for agriculture also produces carbon and contributes to global warming. "Dirty" industrial and manufacturing technologies, particularly those based on processing petrochemicals, produce toxic particle and gas emissions which contribute to acid rain and smog. CFCs are used in industrial, commercial and military applications, including refrigeration, air conditioning, airplane and rocket propulsion, aerosol sprays, electronic devices and plastic foams. Halons are used in fire extinguishers.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Recommendations for improving energy efficiency, using environmentally cleaner technologies and renewable energy sources, and making a transition to sustainable practices are contained in Agenda 21. Provision for an immediate legally-binding commitment on atmosphere and energy use may be contained in the Framework Convention on Climate Change which, it is hoped, will be signed at the Earth Summit.

The purpose of the Convention is to reduce emissions of greenhouse gases. At present, it is unclear whether targets for reducing gases or a timetable for doing so will be included in the text. The European Community, Japan and nearly all members of the G-77 group of developing countries support limiting by the year 2000 the amount of carbon dioxide (the primary greenhouse gas) released into the atmosphere to the amount produced in 1990. The United States and some oil-producing countries oppose this target or the setting of targets in general. They favour voluntary actions to limit emissions of greenhouse gases.

Discussion continues on providing to developing countries the technological and financial assistance they will require if they are to avoid development based on fossil-fuel technologies. New, energy-efficient, pollution-prevention technologies — mostly de-

veloped by industrialized countries — are expensive. So are actions to eradicate the poverty that leads to environmentally degrading practices such as burning forests to clear land for subsistence farming. Developing countries with large forest areas serving as global carbon "sinks" are also seeking compensation for forfeiting the opportunity to financially exploit their forest resources.

FACTS

- 1 billion people worldwide breathe air that does not meet minimum standards set by the UN World Health Organization (WHO).
- In 1986, the United States produced 25 per cent of the world's emissions of carbon dioxide; 19 per cent was produced by the former Soviet Union, 14 per cent by the European Community, 10 per cent by China, 3 per cent by India and 1 per cent by Brazil.
- Average global temperatures have risen 1 degree Fahrenheit in the past 100 years; a climb of 3 to 9 degrees F is predicted by 2050.
- The six warmest years of the twentieth century occurred during the 1980s.
- Studies in industrialized countries have concluded that carbon dioxide emissions could be reduced by 15 to 30 per cent in 10 to 15 years by improving energy conservation and efficiency.
- Fossil fuels currently produce 85 per cent of the energy used worldwide.
- Spending on research into renewable energy technologies by member countries of the International Energy Agency fell from $1.5 billion in 1981 to about $500 million in 1989.
- The UN Environment Programme (UNEP) estimates that if ozone levels drop by 10 per cent, the incidence of skin cancers other than melanoma will rise by 26 per cent worldwide.
- CFCs can damage the ozone layer for as long as 100 years after they are released into the atmosphere.

THE ENVIRONMENTAL PROBLEM

Plant and animal species, ecosystems and genetic materials are rapidly disappearing because of environmental degradation. Biological diversity is the term used to describe the variety of life on Earth. Its loss endangers the delicate, interdependent, ecological web that supports life on the planet and deprives humans of medically useful substances, genetic materials for biotechnology and food strains that improve crop production. Many people say that species and ecosystems have an intrinsic right to exist whether or not they are useful to humans, making species extinction a moral issue as well.

HUMAN ACTIVITIES CAUSING THE PROBLEM

The primary cause of species loss is the disappearance of natural habitats — forests, wetlands, coastal zones — because of urban sprawl, rural development, deforestation, dam construction, air and water pollution, ocean dumping of wastes, overpopulation and the side effects of development in general.

Loss of species also occurs because of "alien invasion," when humans, deliberately or by accident, carry plants and animals from one ecosystem to another, where they flourish if pests, predators or diseases which usually inhibit them are absent. Cattle and goats imported to Hawaii have decimated native plant species there.

The widespread promotion of relatively few crop varieties, together with greater use of fertilizers, pesticides and herbicides, has led to the loss of indigenous crop strains, many of which are naturally resistant to pests or bad weather.

Global warming could also contribute to species loss: sensitive plant or animal species may not be able to adapt to changes in climate. If seas rise as scientists predict, life in species-rich coastal zones could be adversely affected. Depletion of the ozone layer could cause life-destroying ultraviolet rays to interfere with photosynthesis by which plants grow, and to threaten human and animal life on land and in the oceans.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Recommendations for ways to preserve and sustainably manage biological diversity are contained in Agenda 21. Governments at the Earth Summit are also expected to sign a legally binding international Convention on Biological Diversity. Among the points of disagreement to be discussed at Rio:

- Access by developed countries to biological resources and genetic materials, located in tropical rain forests and coastal zones of developing countries.
- Access by developing countries to conservation technology and to biotechnologies derived from or developed from their biological resources.
- Financial aid to developing countries, which they will need for conservation and sustainable management of biological diversity.
- Safeguarding genetically altered organisms (biotechnology products) that are released into the environment.
- The control and ownership of patent rights and intellectual property rights.

FACTS

- No one knows how many species there are on Earth, although some 1.4 million species have been catalogued.
- Estimates of the total number of species range from 5 million to 100 million. Many species die out before they are ever catalogued.
- Scientists believe that for most of the past 600 million years, species have died out at a rate of fewer than 10 per year. Today about 50 species become extinct each day; at this rate, nearly a quarter of all species could disappear within the next fifty years.
- Some 25 per cent of all prescription medications used in the U.S. contain active ingredients derived

from plants. Some 5,100 plant species are used in traditional medicine in China, 2,500 in the former Soviet Union and 2,000 in northwestern Amazonia.

• About 17 million hectares of tropical rain forests, an area about the size of Japan, are being lost each year. These forests cover 7 per cent of the Earth's surface but provide habitats for 50 to 80 per cent of the planet's species.

• In a typical 2,500-acre area of tropical rain forest, some 1,500 species of flowering plants, 750 species of trees, 400 species of birds, 150 species of butterflies and countless species of insects can be found.

• Nearly 7,000 protected areas in 130 nations are preserving wildlife habitats on about 651 million hectares, roughly 5 per cent of the world's land surface.

THE ENVIRONMENTAL PROBLEM

The rapid loss of forests, especially tropical rain forests:

- Causes the loss of innumerable species of insect, bird, plant and animal life;
- Contributes to widespread soil erosion that leads to desertification and loss of land for food production; and
- Damages watersheds, which causes flooding and avalanches and jeopardizes freshwater supplies.

Frequently the result is land so degraded that it is unsuitable for agricultural or economic activity.

Deforestation also reduces the number of trees on the planet to function as "sinks" for carbon dioxide and other heat-trapping "greenhouse gases" produced by cars, factories and power plants worldwide. Without this moderating effect, global warming is expected to be exacerbated. Possible consequences of climate change include desertification, crop failures, unpredictable weather patterns and rising sea-levels, which will threaten people living on islands and in coastal areas.

Often the loss of forests deprives indigenous peoples of their homes, livelihoods and cultural heritage. When relocated to other areas, they are often unable to recreate a sustainable way of life.

HUMAN ACTIVITIES CAUSING THE PROBLEM

Nearly half of all deforestation in tropical areas is caused by clearing land for agriculture and grazing: to grow cash crops for export markets and domestic use, to carve out subsistence plots for poor people and to support cattle ranching which produces beef for export markets.

Countries in tropical regions also log their forests to produce timber to meet developed-country demand for construction materials, furniture, paper and other products. Sales of these products account for 25 per cent of tropical deforestation and most of the logging done in northern temperate forests.

Overpopulation, unequal distribution of land and severe poverty in developing countries also cause deforestation. Poor people often have no other option but to clear land, and Government policies often encourage them to do so.

Additional pressures result from policies supported by agencies like the International Monetary Fund (IMF). The policies, which are often a condition of lending to countries needing to borrow from the Fund or the World Bank, have frequently required the growing of cash crops for export — usually coffee, cocoa, rubber or palm oil which need fertile soil yet quickly deplete its nutrients. As the prices industrialized countries pay for these commodities have fallen, developing countries have worked to produce greater volumes in order to earn the foreign exchange needed to service their debts to banks in industrialized countries. As more land is needed for export crops, poor people are forced onto marginal lands where they clear land for planting, perpetuating the ecologically degrading cycle.

Forests are also destroyed to obtain firewood, since many poor people cannot afford to buy fuel for cooking and heating. Damage is also caused by oil and gas exploration, mining, road-building, dam construction and other large development projects. "Acid rain" caused by toxic airborne pollutants, capable of traveling hundreds of miles from their source, have destroyed forests throughout Europe and North America by killing tree leaves and roots.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Recommendations for combating deforestation and managing forest resources on a sustainable basis are contained in Agenda 21. Early in the preparations for the Earth Summit, industrialized countries hoped that an international legal agreement on forestry, aimed at protecting the world's remaining tropical forests, could be signed at the Conference.

Developing countries — led by Malayasia — agreed that all forests should be managed sustainably. They requested that all forests — both tropical, which are mostly in developing countries, and those in industrialized countries — be included in any international agreement on forestry.

Governments have negotiated a set of principles for the sustainable management of forests in all regions of the world. If adopted at the Summit, the principles will be morally binding and are expected to form the basis of negotiations on an international forestry convention after the Summit.

FACTS

- Half the deforestation caused by human activities has occurred within the last 20 years.
- Globally, logging is an $85-billion-a-year industry.
- Roughly 50 per cent of the wood taken from forests each year is used for fuel; the other half goes for lumber, paper and other wood products.
- Damage to the floodplain of India and Bangladesh along the Ganges — which costs more than $1 billion annually — is believed to be caused largely by massive deforestation.
- According to the Food and Agriculture Organization of the UN (FAO), tropical deforestation in the period 1976-1990 amounted to 40 million acres annually, 83 per cent faster than the estimated rate for the period 1976-1980. In Canada, over 7 million hectares of forest were burned in 1989.
- Environmentalists fear extensive deforestation through logging in the Siberian taiga which, at more than two million square miles, is by far the largest forest in the world.

THE ENVIRONMENTAL PROBLEM

Fresh water for agriculture, industry and domestic use is becoming increasingly scarce. Worldwide demand for this essential, finite resource is outstripping supplies which are being wasted or contaminated by sewage, salinization, toxic chemicals, heavy metals and other hazardous pollutants. Both groundwater (watersheds, aquifers and other underground reserves) and surface water (lakes, rivers and streams) are affected. Pollution of fresh water results in water-borne diseases such as dysentery, typhoid and cholera. It also leads to slower economic development, lower standards of living and, increasingly, regional conflict.

Global climate change is expected to have an impact on freshwater resources. Water pollution also contributes to the loss of biological diversity.

HUMAN ACTIVITIES CAUSING THE PROBLEM

Agriculture: Chemical fertilizers, herbicides and pesticides used by farmers in ever greater amounts seep through soil to groundwater; they also run off into rivers, lakes and streams. Diverting surface water for irrigation frequently leads to the drying up of rivers and lakes. Poorly maintained irrigation systems waste large amounts of water, leading to overpumping from lakes, rivers and groundwater.

Industry: Manufacturing, mining and military activities cause water pollution directly — by discharging toxins into rivers, lakes and streams — and indirectly, by producing air pollution that contributes to acid rain. Toxic and radioactive wastes from landfills and other sites leach into groundwater. Construction of dams for hydropower and irrigation can lead to the salinization of rivers and lakes and salt intrusions in coastal aquifers.

Overuse: Excessive pumping in coastal areas lowers water tables, allowing seawater to seep into aquifers, and has caused land to sink in rapidly expanding urban areas such as Bangkok, Jakarta and Shanghai. In developing countries, *per capita* water use is expected to increase significantly as economic development accelerates.

Sewage: In developing countries, the most serious water problem is the dumping of untreated human sewage into rivers and lakes, many of which also provide drinking water. As population increases, so will the volume of waste and the likelihood of water contamination. Rivers and lakes used as sewage dumps are also used to provide drinking water.

Other: Deforestation through logging or burning causes land erosion and siltation of rivers and streams. Pollutants also reach water sources from urban run-off into sewers. Rapidly growing urbanization aggravates all water use and sewage management problems.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

The many actions necessary to protect and provide fresh water in developing countries add up to the most costly programme area to be addressed at the Earth Summit. A primary concern is the amount of assistance needed by developing countries for projects such as urban sewage systems, which are expensive. Developing countries also require fair and equitable access to technologies that reduce water-polluting wastes. Disagreements remain over the terms of such transfers.

Some specific issues have emerged. China and Japan oppose efforts to consider the environmental damage caused by dam construction. Canada favours creating a world water council while other countries prefer regional cooperation. Island states want greater emphasis on global warming and coastal water supplies.

FACTS

- Agriculture accounts for between 70 and 80 per cent of the global demand for fresh water; less than 20 per cent is for industry and 6 per cent is for domestic use.
- Only 25 per cent of the 1.5 billion urban dwellers in developing countries have access to clean water and sanitation services.
- 1.2 billion of the world's people lack safe drinking water.
- Four million children die each year from diseases related to a lack of safe drinking water and inadequate sanitation.
- In developing countries, 80 per cent of all diseases and over 30 per cent of deaths are caused by drinking contaminated water.
- The typical North American family of four uses 243 gallons of water per day for: toilet-flushing (100 gallons), showering and bathing (80), laundry (35), dish-washing (15), bathroom sink (8), utility sink (5).
- Agriculture in the United States uses 600 gallons of water per capita per day; to produce one egg, an American farmer uses 40 gallons of water.
- Provision of fresh water and sanitation to meet basic health needs by 2000 could cost $36 billion per year. The United Nations estimates that use of low-cost technologies could reduce that cost: 80 per cent of needs could be met for $12 billion per year.

THE ENVIRONMENTAL PROBLEM

Hazardous and toxic wastes — from chemical and pesticide manufacturers, petrochemical refineries, makers of synthetics and plastics, industries, mines, farms, nuclear power and weapons plants and military activities — are contaminating air, land and water, including the oceans. This is creating an ecological and public health crisis. Contamination is caused not only by newly produced waste but also by that improperly disposed of long ago. Ecologically safe disposal methods and technologies have yet to be devised. Radioactive wastes, especially, remain toxic for tens of thousands of years.

HUMAN ACTIVITIES CAUSING THE PROBLEM

The current model of development used by industrialized countries — and now to be followed by developing countries as they seek to raise their standard of living — is based largely on the use of toxic raw materials and production technologies that generate vast amounts of hazardous waste and products containing hazardous substances. The long-term costs of producing these wastes and products — in the form of environmental damage and public health problems — are typically borne not by the manufacturer but by society at large and generations to come.

Industry has resisted the shift to non-polluting technologies and sustainable practices, despite increasing evidence that such a shift can be profitable. Governments have yet to encourage the private sector to adopt full-cost environmental accounting — including the cost of sustaining the environment in a business's operating costs. Government legislation is increasingly stringent but usually focuses on only a small percentage of the waste produced. Most regulatory efforts continue to emphasize controlling "end-of-pipe" wastes, not preventing pollution in the first place.

Legal and illegal exports of hazardous waste by industrialized countries to developing countries make this an international issue. Poor countries generally lack the physical and legal infrastructure to handle hazardous waste or enforce laws concerning waste imports. As developing countries have begun to ban such imports, developed countries have continued the trade by disguising hazardous exports as materials for recycling.

Recycling, waste recovery and other efforts to safely manage waste are important in the short term since, during the transition to the use of cleaner technologies, hazardous wastes will continue to be generated. However, such efforts to manage waste could lessen the impetus for completing the shift to pollution prevention.

Global warming and ozone layer depletion have improved the reputation of nuclear power as a supposedly "clean" alternative to fossil fuels that does not produce air pollution. However, nuclear energy remains an unsustainable option. It produces invisible radioactive air emissions and generates large amounts of highly toxic waste for which there is no known method of safe disposal.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Agenda 21 calls for cleaner technology to reduce amounts of waste, safe disposal and recycling of waste, and the extension of waste services to developing countries, especially sewage treatment plants.

Many developing countries fear that stricter environmental controls in the industrialized world will lead to more attempts to export waste. They support a ban on all transboundary shipments of hazardous wastes.

The European Community appears generally willing to accept such a ban, with some exceptions. The United States wants such trade in hazardous waste to be negotiated bilaterally between exporting and importing countries.

A consensus appears likely on the need to establish a procedure for "prior informed consent". Partici-

pating countries would agree that before allowing the export of any substance that is domestically regulated, they would inform the receiving country of the regulation and the scientific reasons for it.

FACTS

- International trade in hazardous waste amounts to at least 2.2 million tons each year.
- 89 developing countries have banned toxic waste imports.
- European countries that are members of the Organisation for Economic Cooperation and Development (OECD) generate roughly 24 million metric tons of hazardous waste annually. The United States produced 275 million tons of hazardous waste in 1989.
- According to the United States Environmental Protection Agency, there are more than 350,000 toxic waste sites nationwide — 30,000 of them potentially hazardous and 10,000 possibly posing a direct, serious threat to public health.
- Cleaning up hazardous and radioactive waste sites in the industrialized countries could cost as much as $1 trillion in the next thirty years.

THE ENVIRONMENTAL PROBLEM

Oceans and coastal regions such as wetlands, estuaries and coral reefs form habitats for a rich array of plant and animal life, the main sources of food for half the world's people and essential components of Earth's living environment. They are being damaged, perhaps irreparably, as a result of ecologically unsound practices.

Direct damage will be exacerbated by the effects of ozone layer depletion — the harmful ultraviolet radiation kills plankton, the basis of marine food chains — and rising sea-levels caused by global warming.

HUMAN ACTIVITIES CAUSING THE PROBLEM

Pollutants in oceans mostly originate on land: untreated sewage or sewage sludge, municipal garbage, industrial wastes containing toxic chemicals and heavy metals, pesticide and fertilizer run-off, radioactive wastes and airborne toxins.

Pollution is also caused by oil leaks and spills at port facilities, discharges of oil and other substances at sea as part of normal shipping operations and accidental spills of oil, chemicals and hazardous substances.

Unsustainable practices include large-scale commercial fishing and overfishing with vast driftnets that kill more than the intended catch. Human settlements and tourism lead people to clear coastal lands and engage in activities that put pressure on fragile ecosystems.

People recognize these problems but continue to view the oceans as a dumping ground, a problem exacerbated by the increasing scarcity of landfill space and of adequate land-based disposal technologies. However, the ability of the oceans' self-cleansing mechanism has been overestimated. Most national and international programmes focus on isolated aspects of the situation.

THE POLITICAL ISSUES AT THE EARTH SUMMIT

Actions to protect and sustain oceans and coastal areas are contained in Agenda 21. Negotiations on the following issues will continue at the Summit:

- Extending a moratorium on whaling.
- Protecting other marine mammals such as dolphins and porpoises.
- Overfishing endangered stocks that live within and just outside other countries' exclusive economic zones.
- Disposing of low-level radioactive wastes in the seabed.
- How much emphasis, if any, to place on ozone depletion and global warming as causes of damage to ocean ecosystems.

FACTS

- Forty per cent of ocean pollution comes from rivers, 30 per cent comes from the atmosphere, 10 per cent is the result of direct dumping and 10 per cent is caused by normal maritime activities.
- Some 600,000 tons of oil enter the oceans each year: less than one fourth results from accidental spills; most is the result of normal shipping practices.
- More than half the world's population lives within 60 kilometres of the shoreline. It is expected that two thirds will do so by 2030.
- Coastal regions are home to 85 per cent of the world's fish. About one third of all fish species live in coral reefs found near coasts.

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